

SECTION 5200 - DISINFECTION

5201 **SCOPE.** This section covers the disinfection of all new water lines, valves, and appurtenant items.

5202 **GENERAL.** Materials, methods, and procedures for disinfection work shall conform to the requirements of AWWA C601, Standard for Disinfecting Water Mains except as modified herein.

All disinfection work shall be acceptable to the Kansas State Board of Health and Environment, and any and all requirements thereof which may be in conflict with any provision of the specification shall govern.

Water in reasonable amounts for proper completion of flushing or disinfection work will be furnished at existing fire hydrants by the owner without charge to the contractor. The contractor shall furnish all necessary pipe, hose, nozzles, and tools and shall perform all necessary labor. Contractor shall make arrangements with the city Utilities Department (who will fix the time, rate, and duration of each withdrawal from the distribution system) as to the amount of water required and the time when the water will be needed. Unnecessary waste of water will not be tolerated. Special hydrant wrenches shall be used for opening and closing fire hydrants. In no case shall pipe wrenches be used for this purpose.

When required by the engineer, the contractor shall submit a detailed outline of the proposed procedure relative to sequence of operations, manner of filling and flushing disinfected lines, and the disposal of wasted water.

All hydrants and valves involved in the disinfection operation shall be bagged or otherwise marked.

5203 **FLUSHING.** Immediately prior to disinfection, the main to be disinfected shall be flushed at the maximum velocity which can be developed. The flushing velocity shall be at least 2.5 feet per second. All flushing shall be performed after the hydrostatic test is completed and accepted.

All flushing work shall be done in the presence of the engineer or city representative. The contractor shall notify the engineer at least 24 hours in advance of the times and places at which flushing work is to be done.

5204 **DISINFECTION.** **The pipelines shall be disinfected by the continuous feed method.**

In using the continuous feed method, chlorine feed shall be proportional to the rate of flow into the pipe so that the entering water contains at least 50 mg/1 of available chlorine. Chlorine application shall be continuous until the entire pipeline is filled with the chlorine solution. The treated water shall be retained in the pipeline for at least twenty-four (24) hours and the chlorine residual at the end of the period shall be at least 25 mg/1.

The Disinfections Requirements will meet KDHE's "Policies, General Considerations and Design Requirements for Public Water Supply Systems in Kansas," regarding requirements of disinfection.

Prior to flushing the line free of chlorine, a test shall be conducted to verify the chlorine residual. Such test shall be performed by the city using the drop dilution method in accordance with AWWA C601. The contractor shall dispose of chlorine and flushing water in a proper manner at no additional cost to the owner.

Prior to flushing the pipe of chlorinated water, the discharge environment shall be inspected. If there is any possibility that the chlorinated discharge will damage the environment, sodium bisulfite or equal neutralizing chemical shall be applied to the water to assure the thorough neutralization of the chlorine residual. This work shall conform to AWWA C651-92, Section 6.

During disinfection, all valves and hydrants shall be operated to ensure that all appurtenances are disinfected. During final flushing operations, valves shall be manipulated in such a manner that the strong chlorine solution in the line being chlorinated will not flow back into the supply line.

- 5205 BACTERIOLOGICAL TESTS. After chlorine solution has been flushed out of the line, and before the line is placed in service, city staff will take samples from each end and quarter points and tested for bacteriologic quality and show the absence of coliform organisms. The samples shall be collected by city staff in accordance with AWWA C601 and delivered to an acceptable independent testing laboratory confirming that there is an absence of coliform organisms. Tests will be made at the expense of the owner.
- 5206 REPETITION. If initial disinfection fails to produce satisfactory bacteriological samples, the disinfection shall be repeated at the expense of the contractor until satisfactory bacteriological samples have been obtained.